TULINOV, V. F., Cand Phys-Math Sci -- (diss) "Study of slow mesons in the stratosphere by the method of delayed coincidences." Moscow, 1960. 8 pp; (Academy of Sciences USSR, Physics Inst im P. N. Lebedev); 150 copies; price not given; (KL, 17-60, 140)

83168

3.1800

AUTHORS: Charakhch'yan, A. N., Tulinov, V. F., Charakhch'yan, T. N.

TITLE: Cosmic Rays From the Sun

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
                Vol. 39, No. 2 (8), pp. 249-256

TEXT: From July 9 to 21, 1959 intense cosmic-ray flares in the
stratosphere were recorded in a geomagnetic latitude of 64°. These
phenomena were preceded by eruptions in the solar chromosphere having an
intensity of 3^+ (on July 8, 10, 14, and 16). Similar observations had
been made in July, 1958 and May, 1959. Measurements were carried out by
means of radiosondes in the stratosphere. Fig. 1 shows the number of
discharges recorded on different days (in a Geiger-Müller counter) as a
function of air pressure. Fig. 2 shows the number of particles ΔN above
standard as a function of air pressure, Fig. 3 shows the number ΔN of
double coincidences as a function of air pressure, and Fig. 4 shows the
integral energy spectrum of the primary protons. The Institut zemnogo

Card 1/4

83168

Cosmic Rays From the Sun

S/056/60/039/002/005/044
B006/B056

magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR (Institute of Terrestrial Magnetism, Ionosphere, and Propagation of Radiowaves of the AS USSR) placed data on solar chromosphere bursts and magnetic storms at the authors' disposal. They are compared in a diagram (Fig. 5) with the data of cosmic-ray intensity peaks. Fig. 6, finally, shows the amplitudes of cosmic-ray flares (according to measurements carried out in the stratosphere and on sea level) as functions of time (for a period of 100 hours). The following summary is given: 1. The considerable intensity increase of cosmic radiation (bursts) observed in northern latitudes were due to primary protons of solar origin. The energy of these protons was higher than 100 - 120 Mev. From the slope of the straight line in Fig. 4, the index of the integral energy spectrum was determined as being 5.0 - 5.5, as for other flares 6.0 was obtained. The energy spectra of the primary protons of different bursts deviate somewhat from one another. 2. All five cases of observed cosmic-ray intensity peaks were preceded by chromospheric flares on the Sun. 3. Cosmic radiation occurred after a delay of more than 4 to 5 hours and less than 10 to 15 hours. These long periods are not in accordance with the velocities of the primary protons.

Card 2/4

83168
S/056/60/039/002/005/044
B006/B056

Cosmic Rays From the Sun

4. There is a correlation between the cosmic-ray bursts recorded and the magnetic storms beginning suddenly and a Forbush-type decrease of cosmic-ray intensity on the Earth. 5. The magnetic storms have little effect upon the intensity of the primary protons in the flares. A direct correlation could be determined between the amplitudes of the intensity increase of cosmic-ray bursts in the stratosphere at 64° north latitude and the amplitudes of the intensity drop of cosmic radiation in the stratosphere in more southern latitudes (51 and 41°). 6. The cosmic-ray bursts observed had a duration of the order of hours. In order to explain the results obtained in their totality, it is assumed that solar corpuscular beams function as the source of the primary protons of the bursts, which have frozen magnetic fields. The latter act as traps in which the protons are kept. The authors finally thank S. N. Vernov, Corresponding Member of the AS USSR, for discussions. There are 6 figures, 1 table, and 5 references: 3 Soviet and 2 US.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
(Institute of Physics imeni P. N. Lebedev of the Academy

Card 3/4

Cosmic Rays From the Sun

$^-$83168
S/056/60/039/002/005/044
B006/B056

of Sciences USSR)

SUBMITTED: February 26, 1959

Card 4/4

CHARAKHCH'YAN, A.N.; TULINOV, V.F.; CHARAKHCH'YAN, T.N.

Some data on cosmic rays emitted by the sun. Geomag.i aer. 1
no.2:150-152 Mr-Ap '61.   (MIRA 14:7)

1. Fizicheskiy institut imeni P.N.Lebedeva AN SSSR i Nauchno-
issledovatel'skiy institut yadernoy fiziki Moskovskogo
gosudarstvennogo universiteta.
            (Cosmic rays)   (Solar radiation)

CHARAKHCH'YAN, A.N.; TULINOV, V.F.; CHARAKHCH'YAN, T.N.

Intensity flares of cosmic rays in the stratosphere in November 1960. Geomag. i aer. 1 no.4:494-499 Jl-Ag '61.   (MIRA 14:12)

1. Fizicheskiy institut imeni P.P. Lebedeva AN SSSR i Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Cosmic rays)

3.2410

28754
S/056/61/041/003/007/020
B125/B102

AUTHORS: Charakhch'yan, A. N., Tulinov, V. F., Charakhch'yan, T. N.

TITLE: Energy spectrum and time dependence of the intensity of protons of solar cosmic radiation

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 3(9), 1961, 735-746

TEXT: The authors report on stratospheric studies of the energy spectrum and the time dependence of the total proton intensity of solar cosmic radiation produced during the period of chromospheric eruptions. Measurements were made with radiosondes carried into the stratosphere by balloons. The number of discharges in a single counter and that of double coincidences in a telescope consisting of two Geiger-Müller counters were measured at various altitudes. The spectra of the various eruptions were similar, and did not essentially change throughout the eruptions (2-3 days). Primary protons are produced on the sun within a period much shorter than solar eruptions. The mechanism of proton production is the same in all eruptions. The integral energy spectrum of protons for E_p from 100 to

Card 1/N 3

Energy spectrum and time dependence...

28754
S/056/61/041/003/007/020
B125/B102

400 Mev can be represented as an exponential function of their kinetic energy E_p with the exponent $\gamma = 2.0$. The energy spectrum of solar protons becomes softer during the Forbush decrease ($\gamma \approx 5.5$). This and the simultaneous hardening of the spectrum of galactic protons indicate that: Solar corpuscular currents carrying along frozen magnetic fields are carriers of protons of solar cosmic radiation. This phenomenon can only be explained by the existence of magnetic traps in solar corpuscular currents. In addition to protons, also other particles with ranges of less than 7 mm Al penetrate into the stratosphere during the Forbush decrease. The origin of these particles, which are only found during the Forbush decrease, is unknown. The time dependences of the intensity of primary protons in flares in the stratosphere agree satisfactorily with computations performed on the basis of the theory of proton diffusion in the interplanetary medium with magnetic clouds as scattering centers. There are 7 figures, 2 tables, and 21 references: 9 Soviet and 12 non-Soviet. The three most recent references to English-language publications read as follows: R. L. Arnoldy, R. A. Hoffman, J. R. Winkler, J. Geophys. Res., 65, 3004, 1960; C. J. Fan, P. Neyer, J. A. Simpson, Phys. Rev. Lett., 5, 269, 1960; J. C. Anderson, R. L. Chasson, M. P. Lifshitz, T. Suda, J.

Card 2/4

28754
S/056/61/041/003/007/020
B125/B102

Energy spectrum and time dependence...

Geophys. Res., 65, 3889, 1960.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
(Physics Institute imeni P. N. Lebedev of the Academy of
Sciences USSR). Institut yadernoy fiziki Moskovskogo
gosudarstvennogo universiteta (Institute of Nuclear
Physics of Moscow State University)

SUBMITTED: April 27, 1961

Legend to Table 1: (1) Date of measurement; (2) time of measurement
(world time); (τ) in hr, duration of measurement.

Card 3/4

S/169/62/000/005/074/093
D228/D307

/

AUTHORS: Charakhch'yan, A. N., Tulinov, V. F. and Charakhch'-
yan, T. N.

TITLE: 27-day cosmic ray variations in the stratosphere in
the period from July 1957 to February 1958

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1962, 11, ab-
stract 5G86 (V sb. Kosmich. luchi, no. 4, M., AN SSSR,
1961, 173-178)

TEXT: The authors investigate the 27-day periodicity of the chan-
ge in the intensity of cosmic rays in the stratosphere during the
periods 1/VII/1957 - 1/II/1958 and 1/II/1958 and 1/VII/1958. In
the first period a 27-day intensity variation with an amplitude of
$\sim 5.5 \pm 0.6\%$ was observed in the stratosphere. The amplitude in
the neutron component comprised 2.0% in latitude 53.5° on the
earth's surface. No correlation was detected between the 27-day
cosmic ray variations and the K-index of the geomagnetic activity.
—A 22-23 day periodicity is clearly displayed in the cosmic ray va-

Card 1/2

L 4474-66   ENT(1)/ENT(m)/FCC/1/ENA(n)   IJP(c)   GW

ACC NR: AP5024645   SOURCE CODE: UR/0048/65/029/009/1728/1730

AUTHOR: Antonov, R.A.; Smorodin, Yu.A.; Tulinova, A.I.

ORG: none

TITLE: On the width of the maximum of the altitude dependence curve for extensive
air showers   /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31
August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1728-1730

TOPIC TAGS: primary cosmic ray, secondary cosmic ray, extensive air shower, nucleon
interaction, inelastic interaction

ABSTRACT: Using recent experimental data from several sources on the absolute inci-
dence rates of extensive air showers of different strengths at different altitudes,
the authors have constructed isoincidence curves for rates of 10^{-9}, 10^{-10}, and 10^{-11}
shower axes/cm^2 sec sterad on a log N versus t plot (N is the number of particles in
the shower and t is the depth in the atmosphere). If there were no fluctuations in
the shower development process, these curves would represent the development in the
atmosphere of showers of different strengths. The fluctuations are discussed and it
is concluded that they are not more significant than the ~ 30 % experimental error.
The isoincidence curves are characterized by broad maxima, which extend nearly from

Card 1/2   0901 0273

L 4474-66

ACC NR: AP5024645

200 to 700 g/cm^2. Recent experimental data from a number of sources on the atmospheric depth of maximum development of extensive air showers of different energies are compared with theoretical calculations. The fact that the maximum development can occur at depths as small as 200-300 g/cm^3 shows that there must be interactions in which the energy is widely distributed among secondary particles. The energy dependence of the depth of maximum development, at least for energies up to 5 x 10^{15} eV, does not agree with the predictions of purely electromagnetic cascade theory, as asserted by K.Kamata, K.Murakami, and S.Kawasaki (International Conference on Cosmic Rays, Vol. 4, Jaipur, 1963), but is consistent with those of nuclear cascade theory. Orig. art. has 2 figures and 1 table.

SUB CODE: NP/ SUBM DATE: 00/-   ORIG REF: 010/ OTH REF: 007

Card 2/2

PLYUSHKINA, Ye.Z.,inzh.; KIRILLOV, F.G.,inzh.; TULINOVA, L.V.

Method for determining the keeping quality of sunflower seeds during storage. Masl.-zhir.prom. 24 no.5:12-13 '58. (MIRA 12:1)

1. TSentral'naya laboratoriya Upravleniya maslozhirovoy promyshlennosti Krasnodarskogo sovnarkhoza (for Plyushkina, Kirillov).
2. Labinskiy maslozavod (for Tulinova).
(Sunflower seed--Storage)

LOBANOV, Yu.N.; TULINOVA, N.I.

Certain characteristics of the capture and acceleration of electrons in the betatron. Izv.vys.ucheb.zav.; no.6:124-130 '59.
(MIRA 13:6)

1. Moskovskiy gosuniversitet imeni M.V.Lomonosova.
(Betatron) (Electrons)

LOBANOV, Yu.N.; TULINOVA, N.I.

Behavior of an electron beam in a betatron during the period of
injection. Zhur. tekh. fiz. 31 no.2:194-199 F '61. (MIRA 14:4)
(Electron beams)   (Betatron)

69161

3/139/59/000/06/018/034

E032/E114

On Certain Properties of the Capture Mechanism and the Acceleration Process in a Betatron

there may appear another orbit of a radius greater than R_0 which will be stable during the acceleration cycle. In that case the betatron should produce two pulses of γ radiation which are separated in time. This effect has in fact been found in the case of the 3 MeV betatron of the Scientific Research Institute of Nuclear Physics of Moscow State University. This betatron has been built specially for the purpose of studying the electron capture mechanism. In papers concerned with the mechanism of capture of particles in a betatron, the decrease in the intensity of γ radiation as a function of the injection current, for currents exceeding a certain optimum value, is explained by the defocussing effect due to surplus electron space charge which fills the chamber during the admission process. However, a careful analysis of the behaviour of the electron beam circulating in the chamber during the injection process shows that the defocussing effect of the surplus electrons can only lead to a reduction in the rate of increase of the intensity with

Card
2/4

69161
S/139/59/000/06/018/034
E032/E114

On Certain Properties of the Capture Mechanism and the Acceleration
Process in a Betatron

increased injection current.   Therefore the above effect
must be due to some other causes.   It is suggested that
the decrease in the intensity for admission currents
exceeding the optimum value is due to the collective
capture mechanism whose efficiency is strongly dependent
on the injection current.   In fact if the injection
currents are smaller than the optimum value and the
collective capture mechanism ensures the reduction of the
radii of instantaneous electron orbits of about 1 mm per
revolution, then for admission currents much greater than
the optimum value this orbit contraction may become very
large.   As a result, the electrons will approach the
inner wall of the chamber and will be taken out of the
acceleration process.   Thus for injection currents
considerably greater than the optimum value it is in
general impossible to accelerate electrons in a betatron,
because of the particle losses at the inner wall.   It
has been found that the collective capture mechanism
ensures maximum intensity of radiation for such injection
currents for which the efficiency of the mechanism is

Card
3/4

69161
S/139/59/000/06/018/034
E032/E114
On Certain Properties of the Capture Mechanism and the Acceleration
Process in a Betatron

still relatively low.   For injection currents
considerably greater than the optimum value, the
efficiency of the collective mechanism is greater still
and the electrons leave to smaller radius orbits after
one or two revolutions, but the intensity in this case
is smaller than the limiting intensity owing to the
capture of some of the electrons by the inner walls of
Card   the chamber.
4/4   There are 6 figures and 2 Soviet references.

ASSOCIATION: Moskovskiy gosuniversitet imeni M.V. Lomonosova
            (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: December 27, 1958

AUTHOR: Lobanov, Yu.N.; Tulinova, N.I.

ORG: None

TITLE: On the capture of electrons into betatron orbits

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 1, 1966, 151-154

TOPIC TAGS: betatron, electron beam, electron interaction , electron capture

ABSTRACT: The authors have investigated the effect of injection current and duration of the injection pulse on the output of a betatron. Injection pulses as short as 10 nanosec were employed; with such short pulses electrons were injected into only about one-third of the circular orbit, so that any collective effects that might arise from interaction between successive turns of the injected beam were eliminated. When much longer injection pulses were employed (pulse durations up to 160 nanosec were investi- gated) the effects (if any) of such multiturn interactions would be present and might be identified. The inner and outer radii of the betatron chamber were 4.5 and 10.6 cm and the radius of the equilibrium orbit was 7.5 cm. The electrons were injected at energies of 1 to 2 keV; the injection phase was selected for maximum betatron output and corresponded to an initial orbit radius of 9 cm. When the pulse length was 11 nanosec the betatron output N was proportional to the injection current I (determined

UDC: 539.107.6

Card 1/2

ACC NR: AP6004891

2

from the measured average injection current $\bar{I}$ and the duty cycle) for I less than 30 mA and to I^2 for I between 35 and 70 mA. The critical value $I_c = 30$ M mA of I at which $d\log N/d\log I$ changed from 1 to 2 (injection energy 1 keV) agreed within a factor 2 or 3 with the value calculated by the formula of I.M.Samoylov (ZhETF, 39, 705, 1959). The value of I_c for an injection energy of 2 keV decreased from 43 to 4 mA as the pulse duration was increased from 23 to 103 nanosec. When the injection current I was increased sufficiently the betatron output began to decrease with increasing I. The value I_{max} of I at which N assumed its maximum value N_{max} was in approximate agreement with the value calculated by the formula of L.Gonella (Nucl. Instr. and Meth., 22, 269, 1963) but decreased slightly with increasing pulse duration. The value of N_{max} depended significantly and nonmonotonically on pulse duration. The authors expect to discuss this phenomenon in a future paper. The authors thank Professor V.A.Petukhov for proposing the investigation of short injection pulses, and O.S.Kolotov for assistance with the work. Orig. art. has: 2 formulas and 3 figures.

SUB CODE: 20/   SUBM DATE: 09Dec64/   ORIG REF: 009/   OTH REF: 001

Card 2/2 UR

ANTONOVA, Iya Aleksandrovna; GONCHAROVA, Nataliya Georgiyevna;
TULINOVA, Nataliya Ivanovna; TROSHKIN, Yu.S., red.

[Laboratory manual on nuclear physics] Praktikum po
iadernoi fizike. Moskva, Mosk. univ., 1965. 134 p.
(MIRA 18:12)

KOLOTOV, O.S.; LOBANOV, Y u.N.; TULINOVA, N.I.

Generation and recording of short pulses of electron current from a betatron injector. Prib. i tekh.eksp. 10 no.5:37-39
S-O '65.
(MIRA 19:1)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta. Submitted July 27, 1964.

L 39801-66   EWT(1)/EWT(m)   IJP(c)   AT/GD-2

ACC NR: AP6011394

SOURCE CODE: UR/0057/66/036/003/0486/0490

AUTHOR: Tulinova, N.I.

ORG: none

TITLE: Concerning capture of electrons in a betatron

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 3, 1966, 486-490

TOPIC TAGS: betatron, electron accelerator, electron beam, electron interaction, electron oscillation, electron loss, electron capture

ABSTRACT: Earlier work of the author and Yu. N.Lobanov (ZhTF, 34, No. 1, 1966) on capture of electrons in a betatron orbit have been continued. The present experiments were performed with the 3 MeV betatron of the Scientific Research Institute of Nuclear Physics at the Moscow State University and a three-electrode injector of ordinary design. The radii of the inner and outer walls of the betatron and of the equilibrium orbit were 4.5, 10.5, and 7.5 cm, respectively. Injection was initiated at a stage in the cycle when the instantaneous orbits would be close to the equilibrium orbit and was continued for different lengths of time ranging from 1 to 14 periods of revolution of an electron in the betatron. The injection current was varied from 1 to 43 mA and the potential on the injector was varied from 0.5 to 1.75 kV. The resulting gamma-ray intensity, regarded as a measure of the number of captured electrons, is presented graphically as a function of the duration of injection

UDC: 621.384.613

Card 1/2

L 39801-66

ACC NR: AP6011394

for different fixed values of the injector voltage and injection current. These curves have maxima (or in two cases exhibit onset of saturation) at an injection time of about 5 betatron revolution periods. The curves for the higher values of the injection current have the sharper maxima. The observed behavior is ascribed to the effect of interaction between successive turns of the injected beam. It is shown that such interaction can either enhance or damp out betatron oscillations and, with the aid of earlier results of the author and Yu.N.Lobanov (ZhTF, 31,194,1961), that in the present betatron such interaction will result in loss of all but the last two or three turns of the injected beam. A theoretical curve of gamma-ray intensity as a function of injection time based on these calculations would show onset of saturation at an injection time of 2 or 3 betatron revolution periods. By taking into account the angular spread of the injected beam, however, which in the present experiments was ± 6°, it was possible to derive theoretical curves with maxima at the injection time of 5 revolution periods, as observed. It is concluded that interaction between successive turns of the injected beam plays a significant role in the capture of electrons in betatrons. The author thanks A.A.Kolomenskiy for his interest in the work, and Yu.N.Lobanov and O.S.Kolotov for assistance with the experiments. Orig.art. has: 4 formulas, 4 figures, and 2 tables.

SUB CODE: 20   SUBM DATE: 29May65   ORIG. REF: 006

Card 2/2 mcf

L 33405-66   EWT(1)/EWT(m)   IJP(c)   AT

ACC NR: AP6015317   (A, N)

SOURCE CODE: UR/0057/66/036/005/0937/0941

AUTHOR: Tulinova, N. I.

36

53

B

ORG: none

TITLE: Investigation of the influence of injection pulse duration on the capture of electrons in a betatron *19*

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 5, 1966, 937-941

TOPIC TAGS: betatron, betatron accelerator, space charge, electron beam, electron oscillation, secondary electron emission

ABSTRACT: The present paper reports a continuation of earlier work of the author and collaborators (ZhTF, 39, 1173, 1959) on the influence of injection pulse duration on the intensity of the x rays from a betatron. The betatron employed in the experiments has been described elsewhere by the author and collaborators (PTE, 5, 37, 1965; ZhTF, 36, No. 1, 1966). The intensity of x rays from the betatron was measured as a function of the duration of the injection pulse, the injection current, and the injection potential. The injection pulse duration was varied from about 10 to 150 nanosec (corresponding to 4 revolutions of an electron in the betatron orbit); the injection current was varied from 3.5 to 175 mA; and the injection potential was varied from 0.5 to 1.2 kV. For fixed injection current and potential the x-ray intensity was maximum for a

Card 1/2

UDC: 621.384.613

L 33405-66

ACC NR: AP6015317

certain optimum pulse duration and decreased toward zero with further increase of the
pulse duration. For fixed injection potential the pulse duration for maximum x-ray
intensity was inversely proportional to the injection current, and thus corresponded
to injection of a certain optimum charge into the machine. The optimum injected
charge increased with increasing injection potential. The radial position of the elec-
tron beam in the betatron was explored with a probe, and it was found that the beam
was shifted toward the center of the chamber with increasing injection pulse duration.
The observed results cannot be explained by interaction between successive turns of
the beam in the betatron, for the maximum x-ray intensity frequently occurred for a
pulse duration much shorter than the time required for even a single revolution of
the electrons in the betatron orbit. It is hypothesized that the variation of x-ray
intensity with injection pulse duration is due to enhancement of betatron oscillation
by the space charge of secondary electrons knocked from the walls of the chamber by a
fraction of the electrons of the injected beam. This hypothesis is discussed in a
quantitative way, and it is concluded that it can account for the observed behavior.
The author thanks A.A.Kolomenskiy for his interest in the work and O.S.Kolotov and Yu.
N.Lobanov for their assistance with the experiments. Orig. art. has: 8 formulas and
5 figures.

SUB CODE: 20/   SUBM DATE: 26Jul65/   ORIG REF: 006/   OTH REF: 000

Card 2/2   JS

TULINOVA, V.B.

URAZOV,G.G., akademik; TULINOVA,V.B.; PLYUSHCHEV,V.Ye.; CHUYKINA,N.I.

Study of conditions for the formation of double sulfates of lanthanum and ammonium from solutions. Dokl. AN SSSR 103 no.4: 635-638 Ag'55.   (MLRA 8:11)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V. Lomonosova
              (Lanthanum sulfate) (Ammonium sulfate)

Tulinova, V. B.

USSR/ Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium.   B-8
         Physicochemical analysis. Phase transitions

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11187

Author   : Urazov G.G., Tulinova V.B., Plyushchev V.Ye., Chuykina N.I.
Inst   : Academy of Sciences USSR
Title   : Correction in the Paper "Study of the Conditions of Formation of Double
             Sulfates of Lanthanum and Ammonium from Solutins"

Orig Pub : Dokl. AN SSSR, 1955, 105, No 5, 884

Abstract : Concerning RZhKhim, 1956, 50191

Card 1/1

AUTHORS: Plyushchev, V. Ye. and Tulinova, V. B.   508

TITLE: Study of solubility in the system Lithium Carbonate -
Lithium Sulphate - Water at 0 C. (Izucheniye
rastvorimosti v sisteme karbonat litiya - sul'fat
litiya - voda pri 0°)

ABSTRACT: A brief account is given of solubility determinations
with the aid of the normal isothermal method in the
system $Li_2CO_3 - Li_2SO_4 - H_2O$ at 0 C., corresponding to
maximal solubility of both components. Results are
presented graphically and show that the solid phases in
the system are Li_2CO_3 and $Li_2SO_4 \cdot H_2O$. No double salts
or solid solutions are formed in the system. The single
reference indicated in the test is omitted. 2 figures, 1 table.

Received October 13, 1956.

Card 1/1

TULINOVA V.B

PLYUSHCHEV, V.E.; TULINOVA, V.B.

Solubility of the system lithium carbonate -- lithium sulfate -- water at 50°. Khim.redk.elem. no.3:3-5 '57.　　　(MLRA 10:8)

1.Institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova.
　　(Lithium cabbonate)(Lithium sulfate) (Systems (Chemistry))

TULINOVA, V.B.; STATSENKO, A.A.; PLYUSHCHEV, V.Ye.

Joint solubility of potassium hydroxide and potassium sulfate.
Zhur. neorg. khim. 5 no.11:2530-2533 N '60.   (MIRA 13:11)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V.
Lomonosova.
          (Potassium hydroxide)   (Potassium sulfate)

AUTHORS: Tulinova, V. B., Plyushchev, V. Ye.,
Ternovskaya, I. Y., Lukova, S. N.,
Samuseva, R. G.

8/078/60/005/03/033/048
B004/B005

TITLE: Investigation of the Joint Solubility of Lanthanum and Sodium
Sulfates

ABSTRACT: The present paper is part of an extensive investigation of the
physicochemical foundation of methods of separating rare earths
which was started together with ^. G. Urazov (Ref 3). The solubili-
ty in the system $La_2(SO_4)_3 - Na_2SO_4 - H_2O$ was determined at 25,
50, and 75°. The binary systems which are components of this sys-
tem have been described in publications. The solubility was deter-
mined by the isothermal method. The equilibrium between solution
and precipitate was established after 14 days which was checked
analytically. The sulfate ion was determined gravimetrically as
$BaSO_4$, the lanthanum ion either gravimetrically as oxalate or,
at low concentrations, colorimetrically according to reference 10.
The results are shown in tables 1-3 (for 25, 50, and 75°), and as
a diagram in figure 1. One double salt $La_2(SO_4)_3 \cdot Na_2SO_4 \cdot 2H_2O$ forms

Card 1/2

5(4)
AUTHORS: Tulinova, V. B., Morzhina, L. G.,   SOV/78-4-5-37/46
             Plyushchev, V. Ye.

TITLE: Investigation of the Common Solubility of Lithium Hydroxide
             and Lithium Sulphate   (Issledovaniye sovmestnoy rastvorimosti
             gidrookisi i sul'fata litiya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 5,
             pp 1170 - 1173 (USSR)

ABSTRACT: By means of the isothermal method solubility in the system
             $LiOH-Li_2SO_4-H_2O$ with 0°, 25°, 50° and 75^oC was investigated

             for the first time. Investigations with 0° were carried out
             in a special thermostat. Re-crystallized chemically pure
             mono-hydrate of lithium sulphate and mono-hydrate of lithium
             hydroxide were used as initial materials. Data concerning the
             solubility of the system $NOH-Li_2SO_4-H_2O$ are given in table 1.

             The isothermal line for the solubility of the system $LiOH-Li_2SO_4$

             at 25° is shown by figure 1. The solubility isothermal line

Card 1/2

Investigation of the Common Solubility of Lithium SOV/78-4-5-37/46
Hydroxide and Lithium Sulphate

in the three-component system $LiOH \cdot Li_2SO_4 - H_2O$ at 0°, 25°, 50°
and 70° C was found to consist of two branches intersecting
each other at an "eutonic" point. As all temperatures the
solid phases consist of $LiOH \cdot H_2O$ and $Li_2SO_4 \cdot H_2O$. In the
presence of lithium sulphate solubility in $LiOH \cdot H_2O$ is lower.
Solubility decreases considerably with an increase of
lithium hydroxide concentration. There are 1 figure, 1 table
and 3 references.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im.
M. V. Lomonosova,
(Moscow Institute for Fine Chemical Technology imeni M.V.
Lomonosov)

SUBMITTED: February 21, 1958.
Card 2/2

SOV/78-4-5-39/46

5(4)
AUTHORS: Plyushchev, V. Ye.,   Tulinova, V. B.

TITLE: Investigation of the System $LiCl-Li_2SO_4-H_2O$
              (Issledovaniye sistemy $LiCl-Li_2SO_4-H_2O$)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 5,
              pp 1184-1189 (USSR)

ABSTRACT: The solubility in the system $LiCl-Li_2SO_4-H_2O$ at 0, 25, 50,
              and 75°C was investigated by means of the isothermal method.
              The results obtained are shown by table 1. The isothermal
              line of the solubility of the system $LiCl-Li_2SO_4-H_2O$ at

              0, 25, 50 and 75°C is shown by figures 1 - 4. The results
              obtained show that the solubility isothermal line in this
              system are of similar character at all temperatures and
              consist of two branches which correspond to the crystalliza-
              tion of the components of the system. It was found that no
              double salts or solid solutions form in the three-component
              system $LiCl-Li_2SO_4-H_2O$. In the three-component system the

              solubility of lithium sulphate is considerably reduced in
Card 1/2   the presence of lithium chloride, which causes salting-out

Investigation of the System $LiCl-Li_2SO_4-H_2O$ SOV/78-4-5-39/46

to a considerable extent. There are 4 figures, 1 table, and 12 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova
(Moscow Institute for Fine Chemical Technology imeni M. V. Lomonosov)

SUBMITTED: February 21, 1958

Card 2/2

Akademiya nauk SSSR. Institut obshchey i neorganicheskoy khimii

Khimiya redkikh elementov, vyp. 3 (Chemistry of Rare Elements, Nr 3) Moscow,
   Izd-vo AN SSSR, 1957. 135 p. 4,500 copies printed. Errata slip inserted.

Ed. of Publishing House: Yu. S. Sklyarenko; Tech. Ed.: A. A. Pavlovskiy;
   Editorial Board: I. V. Tananayev (Resp. Ed.), S. A. Pogodin, Ye. Ya.
   Rode, V. G. Tronev, and O. F. Bogush (Secretary).

PURPOSE: The book is intended for scientists and engineers concerned with the
   study and utilization of rare elements.

COVERAGE: The book is a collection of papers on investigations in the chemistry
   of rare elements conducted at the Institut obshchey i neorganicheskoy khimii
   imeni N. S. Kurnakova (Institute of General and Inorganic Chemistry imeni
   N. S. Kurnakov). No personalities are mentioned. There are 143 references:
   59 Soviet, 23 English, 41 German, 15 French, 4 Italian, and 1 Japanese.

Card 1/3

Chemistry of Rare Elements, Nr 3   SOV/2252

TABLE OF CONTENTS: PAGE

Card 2/3

Chemistry of Rare Elements, Nr 3 (Cont.)

SOV/2252

Tronev, V. G., and A. P. Kochetkova. Synthesis and Thermographic
    Investigation of Some Complexes of Indium

87

Zvorykin, A. Ya., and F. M. Perel'man. Isothermal Solubilities at
    25°C in the Systems Na_2MoO_4 - NaCl - H_2O and Na_2MoO_4 - Na_2CO_3 - H_2O

100

Bashilova, N. I. The Chromate Method of Determination of Thallium

105

Alimarin, I. P., and L. Z. Kozel'. Quantitative Determination of
    Zirconium with Phytin

114

Peshkova, V. M., A. A. Gallay, and N. N. Alekseyeva. Amperometric
    Determination of Molybdenum

119

Perel'man, F. M. A Project of Compiling a Reference Guide on Rare
    Earth Metals

131

AVAILABLE: Library of Congress

Card 3/3

TM/mg
10-1-59

AUTHORS: Plyushchev, V. Ye., Tulinova, V. B.

TITLE: On the Investigation of the Conditions of Lithium Carbonate
              Precipitation From the Solutions of the Alkali Metal Solutions
              (K izucheniyu usloviy osazhdeniya karbonata litiya iz rastvorov
              sul'fatov shchelochnykh metallov)

ABSTRACT: Lithium is mostly isolated as Li_2CO_3 from solutions which
              contain common alkaline elements. Unfortunately, the mutual
              systems Li_2SO_4-Na_2CO_3-H_2O and Li_2SO_4-K_2CO_3-H_2O which come
              into question here have hitherto not been investigated. The
              great difference in the solubility of its two salt components
              is characteristic of the triple system Li_2SO_4-Li_2CO_3-H_2O which
              forms a generating system of the two above mentioned systems.
              This difference is reduced with the temperature rise. This
              is of practical importance since the formation of Li_2CO_3 is

Card 1/4   determined by the equilibrium in complex aqueous solutions from

On the Investigation of the Conditions of Lithium
Carbonate Precipitation From the Solutions of the Alkali Metal Solutions   SOV/156 58-1-3/46

Li_2SO_4, K_2SO_4 and Na_2SO_4 in the case of the extraction of
the sintering product from spodumene and K_2SO_3. The authors
investigated the system Li_2SO_4-Li_2CO_3-H_2O at 0, 25, 50 and 75°
according to the isothermal method. Figure 1 gives as example
the solubility isothermal line in the mentioned system at 50°.
Figure 2 shows the same system graphically with the rays of
Shreynemakers at 50°. The solubility isothermal lines in this
system are similar at other temperatures. They all consist of
two branches which cross in the "eutonic" point. $Li_2SO_4 \cdot H_2O$
and Li_2CO_3 turn out to be bottom phases at all investigated
temperatures. The solution which corresponds to the eutonic
point is saturated with respect to the two last salts. It is
in equilibrium with the two compounds which are very different
with respect to the crystal size and the crystal type. The
system Li_2SO_4-Li_2CO_3-H_2O belongs to the simple type of
ternary systems, but does not form double salts and solid

Card 2/4

On the Investigation of the Conditions of Lithium
Carbonate Precipitation From the Solutions of the Alkali Metal Solutions

SOV/156-58-1-3/46

solutions. The solubility values of all components of the
system, the composition of the solid phases which correspond
to the two crystallization branches are given in a table
as well as the composition of the eutonic solutions and the
solid phases which correspond to them. The investigation of
the common solubility of Li_2SO_4 and Li_2CO_3 showed that the
solubility of the latter decreases rapidly with the concentration
rise of Li_2SO_4. There are 2 figures, 1 table, and 2 references,
1 of which is Soviet.

ASSOCIATION: Kafedra tekhnologii redkikh i rasseyannykh elementov Moskovskogo
instituta tonkoy khimicheskoy tekhnologii im.M.V.Lomonosova
(Chair of Technology of Rare and Trace Elements of the Moscow
Institute of Fine Chemical Technology imeni M.V. Lomonosov)

SUBMITTED: October 10, 1957

Card 3/4

On the Investigation of the Conditions of Lithium
Carbonate Precipitation From the Solutions of the Alkali Metal Solutions   SOV, 156-58-1-3/46

Card 4/4

PLYUSHCHEV, V.Ye.; TULINOVA, V.B.

Conditions for lithium carbonate precipitation from alkali-metal
sulfate solutions. Nauch. dokl. vys. shkoly; khim. i khim. tekh.
no.1:9-11 '58.   (MIRA 11:6)

1. Rekomendovana kafedroy tekhnologii redkikh i rasseyannykh
elementov Moskovskogo instituta tonkoy khimicheskoy tekhnolgii
im. M.V. Lomonosova.
(Lithium carbonate) (Lithium sulfate) (Solution (Chemistry))

PLYUSHCHEV, V.Ye.; TULINOVA, V.B.; KUZNETSOVA, G.P.; KOROVIN, S.S.;
PETROVA, R.G.

Studying the system $CsCl - CaCl_2 - H_2O$. Zhur.neorg.khim. 2
no.9:2212-2220 S '57.
(MIRA 10:12)

1.Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.
Lomonosova.

(Caesium chloride) (Calcium chloride)

PLYUSHCHEV, V.Ye.; TULINOVA, V.B.; KUZNETSOVA, G.P.; KOROVIN, S.S.
        SHIPETINA, N.S.

        Investigating the ternary system sodium chloride — cesium
        chloride —water. Zhur. neorg. khim. 2 no.11:2654-2660 N '57.
                                                        (MIRA 11:3)

        1.Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.I.
        Kalinina.
                (Sodium chloride) (Cesium chloride)

Tulinova, V. B.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria,
    Physical-Chemical Analysis, Phase Transitions.

                                                                    B-8

Abs Jour: Referat. Zhurnal Khimiya, No 2, 1958, 3823.

Author : V. Ye. Plyushchev, V.B. Tulinova.
Inst   :
Title   : Solubility Study in Lithium Carbonate - Lithium Sulfate -
         Water System at 0°.

Orig Pub: Zh. neorgan. khimii, 1957, 2, No 2, 467-469.

Abstract: The solubility in the system Li_2CO_3 - Li_2SO_4 - H_2O was studied
        isothermally at 0°. The solubility of Li_2CO_3 decreases from
        1.5 to 0.050% by weight in the eutonic solution (26.41% of
        $Li SO$) with the increase of Li_2SO_4 concentration. Li_2CO_3 and
        Li_2SO_4 are the solid phases in the system; no double saults nor
        solid solutions were revealed.

Card   : 1/1

                               -61-

Tulinova, V.B.

URAZOV, G.G.; TULINOVA, V.B.; PLYUSHCHEV, V.E.; CHUYKINA, N.I.

Solubility in the system lanthanum sulfate -- ammonium sulfate -- water at 50°. Khim.redk.elem. no.3:14-27 '57.   (MLRA 10:8)

1.Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova.

                 (Ammonium sulfate)
                 (Lanthanum sulfate)

ZHDANOV, G.B., glavnyy red.; IVANENKO, I.P., zam.glavnogo red.;
SYROVATSKIY, S.I., otv.red.toma; KHRENOV, B.A., zam.red.toma;
GERASIMOVA, N.M., red.; NIKISHOV, A.I., red.; ANTSIPIN, V.I.,
red.; DORMAN, L.I., red.; TULINOV, V.F., red.; FEDOROV, V.M.;
VAVILOV, Yu.N., red.; ABRASIMOV, A.T., red.; FRADKIN, M.I.,
red.izd-va; BRUZGUL', V.V., tekhn.red.

[Radiation belts of the earth. Primary cosmic radiation and its
properties and origin] Radiatsionnyi poias Zemli. Pervichnoe
kosmicheskoe izluchenie, ego svoistva i proiskhozhdenie. Moskva,
Izd-vo Akad.nauk SSSR, 1960. 258 p. (Trudy Mezhdunarodnoi
konferentsii po kosmicheskim lucham, no.3)

(MIRA 14:2)

1. International Conference of Cosmic Radiation.
        (Cosmic rays)

83710

S/056/60/038/004/003/048
B019/B070

3.1800 (1041, 1062, 1168)

AUTHORS: Charakhch'yan, A. N., Tulinov, V. F., Charakhch'yan, T. N.

TITLE: A Case of Strong Perturbation in the Intensities of Cosmic Radiation in the Stratosphere

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1031-1036

TEXT: The authors report on a strong perturbation of the cosmic radiation recorded between May 11, and 15, 1959. The intensity increased to about twenty times the normal value on May 12, at very high altitudes in the geomagnetic latitude 64°. The discharges in a counter, and the number of coincidences in a telescope with two counters were measured. The counters were sent to high altitudes in sounding balloons. The evaluation of the data (starting of the instrument on May 11 at 10 hours 10 minutes) at Loparskaya station showed that the cosmic radiation at high altitudes was stronger than the normal value. Another balloon was launched on the same day at 13 hours. Two other balloons followed on May 12. Measurements were also made from May 13 to 17. It is seen from Fig. 1, which graphically

Card 1/3

83710

A Case of Strong Perturbation in the Intensities   S/056/60/038/004/003/048
of Cosmic Radiation in the Stratosphere   B019/B070

represents the measured data, that the intensity was higher than the
normal up to May 15. This increase in the intensity was observed also at
the sea level and was accompanied by magnetic storms. From the fact that
no increase in the intensity was observed in the latitudes 41 and 51°,
the authors infer that the additional particles observed at the high
altitudes in the latitude of 64° during these days could not have been
photons. The authors discuss in detail the nature and the spectrum of
the primary particles, and refer also to similar phenomena observed on
July 8, 1958. They come to the conclusion that the primary particles must
have been protons, and in support of it they quote American results. The
general discussion of the results is given in great detail. It is men-
tioned that the first observations of the increase of the intensity were
recorded 11 hours after an explosion in the sun's chromosphere. Further,
the effect of the earth's magnetic field on the cosmic particles is
discussed. The authors finally come to the conclusion that the sources of
these protons are corpuscular currents with frozen-in magnetic field which
were emitted by the strong eruption of the sun on May 10, 1959. The
authors thank I. K. Marshanov and Yu. N. Komarov for carrying out the
measurements. There are 4 figures and 3 references: 6 Soviet and 1 US.

Card 2/3

83710

A Case of Strong Perturbation in the Intensities   S/056/60/038/004/003/048
of Cosmic Radiation in the Stratosphere   B019/B070

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
              (Physics Institute imeni P. N. Lebedev of the Academy of
              Sciences, USSR). Institut yadernoy fiziki Moskovskogo
              gosudarstvennogo universiteta (Institute of Nuclear Physics
              of Moscow State University)

SUBMITTED: August 25, 1959

Card 3/3

TULINOV, V.F., CHARAKCHYAN, T.N., CHARAKHCHYAN, A.N., and RYMKO, N.P.

"Secular Variations of Cosmic Ray Intensity in Stratosphere measured Beginning from July, 1957,"

Report presented at the Intl. Conference on Cosmic Rays and Earth Storms, Kyoto, Japan, 4-15 Sept 1961.

31592
S/169/61/000/010/035/053
D228/D304

17.1450

AUTHOR: Charakhch'yan, A. N., Tulinov, V. F., and Charakhch'yan
            T. N.

TITLE: Some data on cosmic rays from the sun

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 10, 1961, 9.
            abstract 10G51 (Geomagnetizm i aeronomiya, 1, no. 2,
            1961, 150-152)

TEXT: Cases of large flares in the intensity of cosmic rays in the
stratosphere, caused by protons with energies of 100 - 200 Me V, were
recorded at the geomagnetic latitude 64°. Chromosphere flares on the
sun--the source of protons with such energies--preceded these flares.
The suggestion is expressed that these protons are transported by solar
corpuscular flows with the magnetic fields frozen in them. It is esti-
mated that the average flow of energy born by protons from the sun in
flares comprises about 5% of the flow of energy born by all the primary

Card 1/2

Some data on...

31592
S/169/61/000/010/035/053
D228/D304

particles of cosmic rays. Certain data are cited about the degree of
irradiation in the interplanetary medium at the expense of the observed
flares. ⌐ Abstracter's note: Complete translation. ⌐

Card 2/2

21,2300 (2217, 2417, 1033)

AUTHORS: Lobanov, Yu. N. and Tulinova, N. I.

TITLE: Behavior of an electron beam in a betatron during the injection period

TEXT: The experiments were carried out by means of a betatron of the NIIYaF MGU (Scientific Research Institute of Nuclear Physics, Moscow State University) specially equipped for this purpose; the experiments were made at 200 cps. Fig. 2 shows the scheme of the chamber, the position of the injector, and the probes in the branches. Tantalum plates, 15 x 30 mm large and 0.5 mm thick were used as probes. In the present paper, the electron flux density intercepted by one or the other probe is measured immediately in the chamber in dependence on its radial position. Besides, also the effect produced by the depth of each probe introduced into the chamber upon the magnitude of the fluxes intercepted by other probes are studied with a radial shift in the chamber (Figs. 3, 4, 5). By means of the data obtained,

Card 1/7

Behavior of an electron ...

S/057/61/031/002/006/015
B124/B204

the distribution of the electron charge in the cross section of the beam,
and also the distribution of the beam in the chamber could be determined
during the first cycles. The electron beam emitted from the source during
radial oscillations, periodically approaches the outer chamber wall, which
occurs in the 4th and 6th cycles, on the azimuths 135° and 225°, where the
probes nos. 1 and 3 were fastened. The experimental results obtained per-
mitted determination of the distribution of the charge over the cross
section of a separate beam. Fig. 6 shows the curve of the dependence of the
flux upon probe no. 3 during its shift from the outer to the inner wall of
the chamber. If a quantity be taken as beam width that corresponds to the
half-width of the differential curve concerned, it holds from Fig. 7 that
the radial dimensions of the beam do not exceed 10 mm. The authors thank
Professor V. A. Petukhov for discussing the results obtained. There are
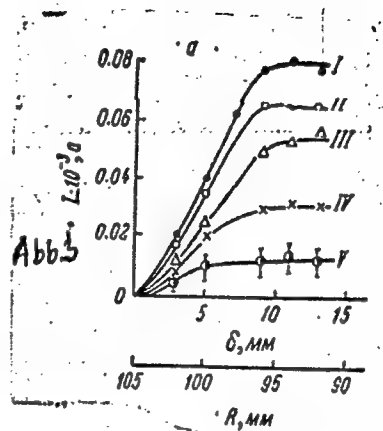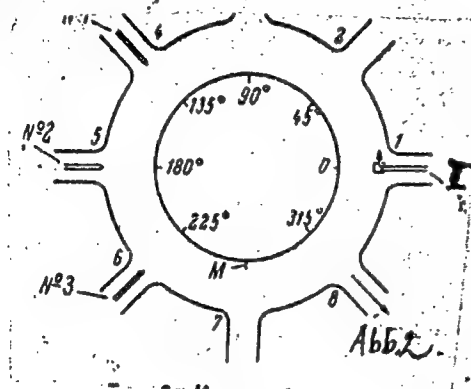7 figures and 4 Soviet-bloc references.

SUBMITTED: May 27, 1959

Card 2/7

Behavior of an electron ...

Legend to Fig. 2. I - injector,
Mo. 1, Mo. 2, Mo. 3 - probes,
M - target

Card 3/7

Behavior of an electron ...
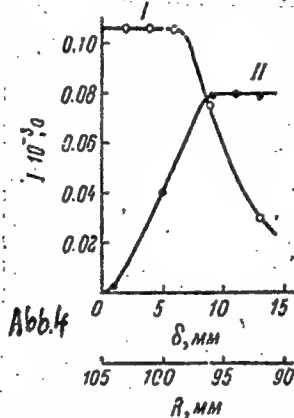
S/057/61/031/002/006/015
B124/B204

Legend to Fig. 3. a - family of
curves of the dependence of flux I
on probe no. I upon the radial
coordinate R in this probe, which,
in the chamber, lies upon the radii
102, 99, 97, 95, and 92 mm (curves
I - IV). On the abscissa, also the
scale of the values δ is plotted,
which give the depth of the probe
introduced into the chamber behind
the edge of the anode of the injec-
tor, b - I - diagram of the depen-
dence of the flux on probe no. 1
upon the radial coordinate of probe
no. 3, II - diagram of the depen-
dence of the flux on probe no. 3
upon its radial coordinate.

Card 4/7

Behavior of an electron ...
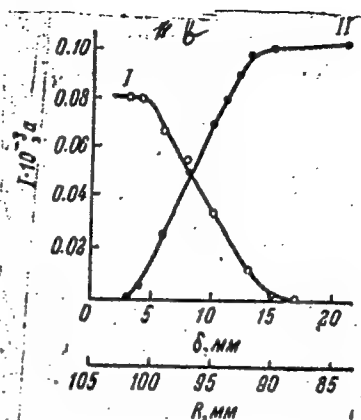
89160
S/057/61/031/002/006/015
B124/B204

Legend to Fig. 4. I - diagram of the
dependence of the flux on probe no. 2
upon the radial coordinate of probe
no. 1, II - diagram of the dependence
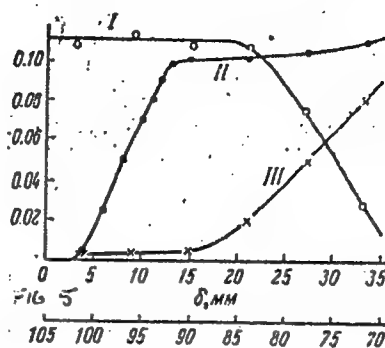of the flux on probe no. 1 upon its
radial coordinate.

Card 5/7

89160

S/057/61/031/002/006/015
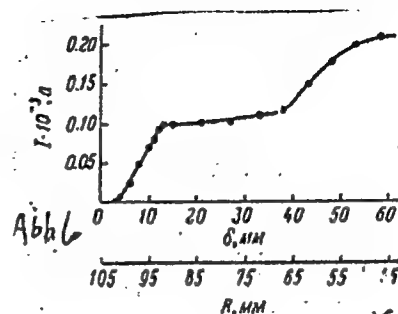B124/B204

Behavior of an electron ...

Legend to Fig. 5. I - dependence of the
flux on probe no. 2 upon the radial
coordinate of probe no. 3, II - depen-
dence of the flux on probe no. 3 upon its
radial coordinate after the remaining
probes have been taken from the chamber,
III - the same in the case of introduction
of probe no. 2 on to a radius of 95 mm.

Legend to Fig. 6. Diagram of the depen-
dence of the flux on probe no. 3
upon its radial coordinates.

Card 6/7

89160

Behavior of an electron ...

Legend to Fig. 7. I-II - curves of the
dependence of the first (radial)
differential of the flux on probes
no. 1 and 3 upon their radial coordi-
nates, III - the same for probe no. 1
after introduction of probe no. 3 on
a radius of 95 mm (the curves were
obtained by graphical differentiation
of curves I and IV in Fig. 3a and
curve II in Fig. 3b).

Card 7/7

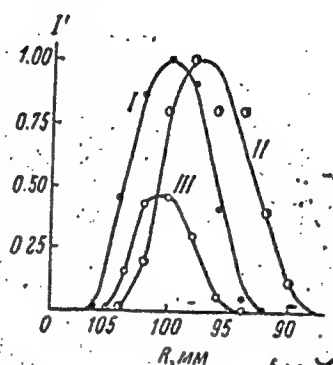
Abb. 7

TULINOVA, V.B.; PLYUSHCHEV, V. Ye.; TERNOVSKAYA, I.V.; LUKOVA, S.N.;
        SAMUSEVA, R.G.

    Mutual solubility of lanthanum sulfate and sodium sulfate.
    Zhur. neorg. khim. 5 no.3:695-700 Mr '60.   (MIRA 14:6)

    1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im.
    M. V. Lomonosova.
                    (Lanthanum sulfate)
                    (Sodium sulfate)

5(2)

PHASE I BOOK EXPLOITATION SOV/2252

Akademiya nauk SSSR. Institut obshchey i neorganicheskoy khimii

Uspekhi khimii elementov, vyp. 3 (Chemistry of Rare Elements, Nr 3) Moscow, Izd-vo AN SSSR, 1957. 135 p. 4,500 copies printed. Errata slip inserted.

Ed. of Publishing House: Yu. S. Shiryatskaya, Tech. Ed.; A. A. Pavlovskiy; Editorial Board: I. V. Tananayev (Resp. Ed.), S. A. Pogodin, Ye. Th. Beh, V. G. Trunov, and O. F. Kagush (Secretary).

PURPOSE: The book is intended for scientists and engineers concerned with the study and utilization of rare elements.

COVERAGE: The book is a collection of papers on investigations in the chemistry of rare elements conducted at the Institut obshchey i neorganicheskoy khimii imeni N. S. Kurnakov (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov). No personalities are mentioned. There are 143 references: 99 Soviet, 23 English, 23 German, 13 French, 4 Italian, and 1 Japanese.

Kuznetsov, V. V., and V. B. Fedorov. Investigation of Solubility in the System Lithium Carbonate-Lithium Sulfate-Water at 50°C 3

Dorokhova, A. V., and L. P. Razdrokina. Vapor Pressure of Saturated Solutions in the System $(NH_4)_2SO_4 - BaCl_2 - H_2O$ 6

Gromov, G. G., V. B. Fizyakov, and N. I. Coxynina. Investigation of Solubility in the System Lithium Sulfate-Ammonium Sulfate-Water at 50°C 14

Tananayev, I. V., and M. I. Levina. Magnesium Ferrocyanides 88

Tananayev, I. V., and R. V. Baumov. Gallium Ferrocyanides and Their Analytical Significance 92

Karzhavina, G. G. Investigation of the Extraction of Ions of Gallium and Indium in Aqueous Solution 97

Tananayev, I. V., and I. V. Tananayev. Investigation of the Reaction of Formation of Indium Hydroxide 72

Usanovich, I. V., and A. P. Kucherkova. Synthesis and Thermographic Identification of Some Complexes of Indium 87

Korgina, A. Yu., and P. M. Petrokova. Isothermal Solubilities at 25°C in the System $K_2SO_4 - KCl \cdot H_2O$ and $K_3PO_4 - K_2CO_3 - H_2O$ 100

Saalikov, M. I. The Chromate Method of Determination of Thallium 105

Alaseeva, I. P., and I. E. Enel'. Quantitative Determination of Zirconium with Phytin 114

Punchnova, T. N., A. A. Galkin, and N. I. Aleytinova. Amperometric Determination of Molybdenum 119

Kovalyova, P. N. A Project of Compiling a Reference Guide on Rare Earth Metals 151

AVAILABLE: Library of Congress

Card 3/3

TULINOVA, Z. I.

262T69

USSR/Nuclear Physics - Cosmic Ray   21 Jul 53
                          Components

"Study of Nonionizing Components of Cosmic Rays in
the Stratosphere," V. A. Vargá, Yu. A. Smorodin,
Z. I. Tulinova, Phys Inst im Lebedev, Acad Sci USSR,
Moscow State U

DAN SSSR, Vol 91, No 3, pp 454-457

Previous works (see Vernov et al. DAN SSSR, 61, 4;
62, 4; 3; 73, 3 (1949-1950)) proved electron
nature of soft component in stratosphere. Such
electrons should be followed by photons, the in-
tensity of which may be computed using cascade

262T69

theory. Expts performed in 1949 with balloons con-
firmed that no less than half of secondary cosmic
particles are generated in stratosphere by photons.
Presented by Acad D. V. Skobel'tsyn 29 May 53.

BARADZEV, L.T.; RUBTSOV, V.I.; SMORODIN, Yu.A.; SOLOV'YEV, M.V.; TOLKACHEV, B.V.; TULINOVA, Z.I.

Interactions of cosmic-ray protons and light nuclei based on cloud chamber measurements at an altitude of 9 km. Izv.AN SSSR.Ser.fiz.
19 no.5:502-507 S-O '55.   (MLRA 9:4)

1.Fizicheskiy institut imeni P.N.Lebedeva Akademii nauk SSSR i Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
        (Cosmic rays) (Nuclear physics)

TULINOVA, Z. I.

56-7-3/66

AUTHOR

BARADZEY, L.T., RUBTSOV, V.I., SMORODIN, Yu.A., SOLOV'YEV, M.V.,
TOCHKAYEV, B.V., TULINOVA, Z.I.

TITLE

On the Formation of the Electron-Photon-Component in the Interaction
between Cosmic Ray Particles with Energies Exceeding to 10^{11} eV and
Beryllium Nuclei
(Ob obrazovanii elektronno-fotonnoy komponenty pri vzaimodeystvii
chastits kosmicheskikh luchey s energiyey vyshe 10^{11} eV s yadrami
berilliya. Russian)

PERIODICAL

Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 33, Nr 7, pp 17 - 2o
(U.S.S.R.)

ABSTRACT

The present paper describes the results of experiments carried out with
a WILSON chamber which was fitted in a magnetic field. This WILSON cloud
chamber operated for 52 hours in a height of 9oo m. Above this cloud
chamber a beryllium block was located, in the interior of which a lead
plate was fitted. On the occasion of the production of electron-photon
showers in the absorbers the cloud chamber was photographed. 149o pho-
tographs were obtained and on 86 of them electronic-nuclear showers
from the beryllium block were found recorded. Among them 5 electronic-
-nuclear showers were found in which more than 1o parts were observed.
4 photographs of interactions are attached. The most important data on
the showers investigated here are shown in a table. This table imparts

Card 1/3

various informations as e.g. on the number of particles observed above
the lead plate, on the number of particles identified as electrons, on
the number of particles which have passed through the lead plate with-
out cascade multiplication, on the maximum number of penetrating part-
icles, on the point where the showers were formed, on the angle $\theta_{1/2}$
within which half of the particles is radiated, on the lower limit
of the total energy of the penetrating particles, on the number of elec-
trons below the lead plate with more than 6 and 3o eV, on the total
energy of those electrons which were obtained by measuring the electron
momenta below the plate, on the lower limit of the energy of the elec-
tron-photon components, on the energy of the electron-photon components
produced on the occasion of the interaction, on the ratio between the
energy of the electron-photon components and the energy of the imping-
ing particle, and on the number of the secondary interactions observed
in the lead plate. The data mentioned in this table show the following:
On the occasion of the interaction of charged cosmic ray particles
(10^{11} - 10^{12} eV) with light nuclei the energy transferred to the elec-
tron-photon component is subjected to important fluctuations and can
drop down to some tenth of a percent.
(With 4 illustrations and 1 table).

Card 2/3

AUTHORS: Baradzey, L. T., Rubtsov V.I., Smorodin Yu.A. ΤΓ20-4±14/60
Solov'yev M.V., Tolkachev B.V., Tulinova Z.I.,

TITLE: The Interaction of the Protons of Cosmic Rays With an Energy of About 1o BeV With Lead-Nuclei (Vzaimodeystviye protonov kosmicheskikh luchey s energiyey okolo 1o10 eV s yadrami svintsa).

PERIODICAL: Doklady Akad.Nauk SSSR, 1957, Vol. 115, Nr 4, pp. 685-688 (USSR)

ABSTRACT: These investigations were performed in an altitude of 9ooo m by means of a cloud chamber in a magnetic field with 92oo oersteds. The scheme for the control mechanism of the chamber is illustrated by a sketch. In order to exclude the interactions caused by pions, the nuclear showers caused in the lead-plate by one individual charged particle were investigated. Altogether 38 of those case were selected, the characteristic photographs of the showers are given. The maximum measured impulse of the charged particles was 3 BeV/c. A table illustrates the distribution of the showers on the number n of particles in the shower. The average number of the particles per interaction is $3,9 \pm 0,3$. The experimental data yield some indications concerning the chief components of the electron-nucleus showers. A diagram illustrates the data of the energy distribution of the electrons. When this spectrum is described by a law of the type $dN/dE \sim E^{-\gamma}$, the exponent is variable. $\gamma \sim 1$ in the case of small energies and $\gamma \sim 2,5$ in the case of energies of

Card 1/2

ANTONOV, R.A.; SMORODIN, Yu.A.; TULINOVA, Z.I.

Dimension of the maximum curve of the altitude effect in extensive air showers. Izv. AN SSSR. Ser. fiz. 29 no.9:1728-1730 S '65.

(MIRA 18:9)

ANTONOV, R.A.; SMORODIN, Yu.A.; TULINOVA, Z.I.

Production of high-energy γ-quanta in extensive air showers
with a momentum of 10^{-9} ev in the upper third of the
atmosphere. Izv. AN SSSR. Ser. fiz. 28 no.11:1896-1898
N '64.   (MIRA 17:12)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR i Nauchno-
issledovatel'skiy institut yadernoy fiziki Moskovskogo
gosudarstvennogo universiteta.

ANTONOV, R.A.; SMORODIN, Yu.A.; TULINOVA, Z.I.

Altitude variation of vertical extensive air showers in the
upper part of the atmosphere. Zhur. eksp. i teor. fiz. 45
no.6:1865-1874   D '63.   (MIRA 17:2)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.

ANTONOV, R.A.; SMORODIN, Yu.A.; TULINOVA, Z.I.

Formation of high-energy γ-quanta in extensive air showers
with energies of 10^{14} to 10^{15} ev. in the upper third of the
atmosphere. Zhur. eksper. i teor. fiz. 46 no.1:28-35 Ja'64.
                                        (MIRA 17:2)
1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.

ACCESSION NR: AP4009107   S/0056/63/045/006/1865/1874

AUTHORS: Antonov, R. A.; Smorodin, Yu. A.; Tulinova, Z. I.

TITLE: Altitude variation of vertical extensive air showers in the upper part of he atmosphere

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 45, no. 6, 1963, 1865-1874

TOPIC TAGS: extensive air shower, cosmic rays, cosmic radiation, air shower flux, vertical air shower flux, shower particle lateral distribution, Gross transformation, particle number spectral exponent, cascade parameter, electron photon component

ABSTRACT: Experiments have been performed in the upper part of the atmosphere to obtain data on the fluxes and spectra of vertical extensive air showers and also on the lateral distribution of the shower particles. Another purpose of the investigations was to check on the validity of the generalized Gross transformation for vertical showers, to check the particle-number spectral exponent, and to determine the cascade parameter. The experimental counter array used

Card 1/2

ACCESSION NR: AP4009107

for the purpose is described. The altitude variation of showers with $\sim 10^6$ particles, obtained on the basis of the experimental results, indicates that the particles with energy $\sim 10^{15}$ eV, which initiate these showers, experience a high energy dissipation in the interactions. A considerable fluctuation in the mechanism of energy transfer in the electron-photon component of the shower is also indicated. "The authors take the opportunity to express deep gratitude to S. N. Vernov for help with the research." Orig. art. has: 8 figures, 15 formulas and 2 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 21Jun63   DATE ACQ: 02Feb64   ENCL: 01

SUB CODE: PH   NO REF SOV: 009   OTHER: 009

Card 2/2

A. A. ANTONOV, Yu. A. SMORODIN, Z. I. TULINOVA

Evolution of vertical EAS in the upper atmosphere

report submitted for the 8th Intl. Conf. on Cosmic Rays (IUPAP), Jaipur India, 2-14 Dec 1963

TULINOVA, Z. I. and ANTONOV, R. A.   and SMORODIN, Yu. A.

"Experimental Data on Development of Extensive Air
Showers in Upper Atmosphere"

Report presented at the International Conference on Cosmic Rays
and Earth Storm, 4-15 September 1961, Kyoto, Japan

P. N. Levedev Institute of Physics of the USSR, Academy of Sciences,
Scientific Research Institute for Nuclear Physics of the Moscow
State University, USSR

31524
S/627/60/002/000/006/027
D299/D304

3, 2410 (2205, 2705, 2805)

AUTHORS: Antonov, R. A., Smorodin, Yu. A., and Tulinova, Z. I.

TITLE: Air showers at an altitude of 9-12 km

SOURCE: International Conference on Cosmic Radiation. Moscow,
             1959. Trudy. v. 2. Shirokiye atmosfernyye livni i kas-
             kadnyye protsessy, 101-106

TEXT: The density spectrum of extensive air showers was studied
by means of hodoscoped counters, whose disposition is shown in a
figure. In one of the experiments, a system of ionization chambers
operated in conjunction with the hodoscope. In order to obtain the
density spectrum of the showers, the mean density ρ of a shower was
determined at all the counters jointly. Such a method of determin-
ing ρ reduces the effect of local electron-density fluctuations.
The passage from the distribution according to the number of opera-

ting counter I_{40}^{m} to the density spectrum, was effected by means of

the integral equation

Card 1/4

31524
S/627/60/002/000/006/027
D299/D304

Air showers at an ...

$$I_{40}^m = \int_0^\infty C_{40}^m (1 - e^{\rho\sigma})^m e^{-\rho\sigma(40-m)} \frac{dH}{d\rho} \, d\rho$$

where σ is the area of a counter and $dH/d\rho$ – the sought for differential density-spectrum; taking as the zeroth approximation $dH/d\rho = f(\sigma\rho)(\sigma\rho)^{-2.5}$, one obtains

$$I_{40}^m = f(\sigma\rho)_{max} \int_0^\infty (\sigma\rho)^{-2,5} (1 - e^{-\rho\sigma})^m e^{-\sigma\rho(40-m)} d(\sigma\rho) = f(\sigma\rho)_{max} S(m)$$

A figure shows the differential density-spectra for showers at sea

Card 2/4

31524
S/627/60/002/000/006/027
D299/D304

Air showers at an ...

level and at altitudes of 9 and 12 km. The showers were divided in-
to 3 groups, according to the electron-density recorded at the cen-
ter of the apparatus. It was found that the distribution of the
shower axes is little affected by changes in shower intensity. In
the following it is assumed that at altitudes of 9 and 12 km, the
lateral distribution of electrons is expressed (in the mean) by
Nishimura's function. A comparison of experimental and theoretical
values showed good agreement. It was found that the lateral distri-
bution of electrons in extensive air showers changes with altitude.
The mean energy of the electron-photon component was determined by
the ionization chambers, simultaneously with hodoscope recordings.
Further, the integral particle-spectra of the showers were obtained

for the interval $5 \cdot 10^5 \leqslant N \leqslant 5 \cdot 10^7$. On the basis of the integral spec-
tra, the energy spectra of the primary particles were calculated;
thereby, very simple assumptions were made. The results are listed
in a table. There are 4 figures, 5 tables and 2 references: 1 So-
viet-bloc and 1 non-Soviet-bloc. The reference to the English-lan-
guage publication reads as follows: K. Kamata, J. Nishimura. Suppl.
of Progr. Theor. Phys., no. 6, 93, 1958.

Card 3/4

Air showers at an ...

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute im. P. N. Lebedev AS USSR); Nauchno-issledovatel'skiy institut yadernoy fiziki MGU (Scientific Research Institute of Nuclear Physics Moscow State University)

Card 4/4

21(8)

SOV/56-36-6-1/66

AUTHORS: Baradzey, L. T., Solov'yev, M. V., Tulinova, Z. I., Filatova, L. I.

TITLE: Momentum Spectrum of Particles of the Hard Component of Cosmic Rays at an Altitude of 9000 m (Spektr impul'sov chastits zhestkoy komponenty kosmicheskikh luchey na vysote 9000 m)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 6, pp 1617 - 1620 (USSR)

ABSTRACT: The authors report on the momentum spectra (for momenta between $0.3 \cdot 10^9$ and $6 \cdot 10^9$ ev/c) recorded by them by means of a cloud chamber and a quintuple coincidence circuit obtained at an altitude of 9 km. In the introduction they describe the apparatus (Fig 1) and give a topographical description of the magnetic field (Fig 2) (average field strength 9090 Oe). Within 14 hours 700 photographs were taken, on which 445 curved traces having a length of 15-17 cm were measured by means of the optical compensator IG-22. For setting up the spectrum the traces were used which form an angle of $< 4^0$ with the chamber plane. Figure 3 shows a momentum spectrum obtained in this manner, composed from the data of two series of measurements. The absolute intensity of this spectrum corresponded to a total intensity of the hard

Card 1/3

Momentum Spectrum of Particles of the Hard Component   SOV/56-36-6-1/66
of Cosmic Rays at an Altitude of 9000 m

component of 3.0 ± 0.15 particles $cm^{-2}min^{-1}steradian^{-1}$, which is
in good agreement with the results obtained by Vernov et al
(Ref 1). The spectral curve within the range of $(2-6).10^9$ ev/c
can easily be represented by an exponential function with the
exponent. 2.8 ± 0.5. Figure 5 shows the measured (and also the
calculated) spectral curves for negative particles, which were
identified as muons, within a larger momentum range. A comparison
with the results with μ^--spectra at sea level (Refs 5,6) leads
to the conclusion that within the momentum interval of

$5.10^8 - 3.10^9$ ev/c about 60% of all muons recorded at sea level
are produced at altitudes of > 9 km. Figure 6 shows the spectrum
of the positive particles; in the case of momenta

$<7.8.10^8$ ev/c muons are concerned. The ratio between positive
and negative muons within the range $(3-7)10^8$ ev/c is 1.7 ± 0.4.
Within the momentum range $>7.8.10^8$ ev/c the positive particles
may be both μ^+ mesons and protons. The ratio $k=\mu^+/\mu^-$ depends
only slightly on momentum and altitude and is between 1.2 and
1.3. For momenta $>10^9$ ev/c, $k=1.25$. Figure 6 shows the positive

Card 2/3   spectrum at an altitude of 9 km, viz. the muon- and the proton

Momentum Spectrum of Particles of the Hard Component   SOV/56-36-6-1/66
of Cosmic Rays at an Altitude of 9000 m

curve on the basis of data obtained from two series. Within
the range of $(1 \div 5).10^9$ ev/c it is found that the protons amount
to $(50\pm10)\%$ of the total number of penetrating particles within
this range. Also the spectral curves of the positive particles
within the range of $(2\div5).10^9$ ev/c may be approximated by means
of exponential curves, with an exponent which corresponds to
the negative particle within the error limits. The authors
thank Yu. A. Smorodin for supervising the work performed
and for discussing the results obtained. There are 6 figures and
7 references, 1 of which is Soviet.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta
(Institute of Nuclear Physics of Moscow State University)

SUBMITTED: December 12, 1958

Card 3/3

TULINOVA, Z. I.; SMORODIN, Iu. A. and ZARDA, Y. B.;

"An investigation of the nonionizing component of cosmic rays in the stratosphere," Doklady Akademii Nauk SSSR, 91, 495-98 (1953).

EVAL - B-75312

IVENSKIY, Yu.N., inzh.; TULLER, A.G., inzh.

Control networks using weak-current devices. Vest. elektroprom.
32 no.4:52-56 Ap '61.   (MIRA 15:5)
                         (Electric networks)

IVENSKIY, Yu.N., inzh.; TULLER, A.G., inzh.

Concerning the increase in the reliability of control-type
switching circuits. Vest. elektroprom. 31 no.9:65-68
S '60.   (MIRA 15:5)
          (Electric networks)   (Electric relays)

IVENSKIY, Yu. N., TULLER, A.G.

Installing the electric equipment of automatic machine-tool
lines. Stan.i instr. 31 no.4:29-31 Ap '60.   (MIRA 13:6)
          (Electric wiring)

Tulinova, Z.I.

BARADZEY, L.T.; RUBTSOV, V.I.; SMORODIN, Yu.A.; SOLOV'YEV, M.V.; TOLKACHEV, B.V.; TULINOVA, Z.I.

Formation of electron-photon components in the reaction between cosmic-ray particles with energies exceeding 10^{11} ev.and beryllium nuclei [with summary in English]. Zhur. eksp. i teor. fiz. 33 no.1: 17-20 Jl '57.   (MIRA 10:9)

1. Fizicheskiy institut im. P.N. Lebedeva Akademii nauk SSSR.
            (Cosmic rays)   (Nuclear reactions)

TULINOVA, Z.I.

BARADZEY, L.T.; RUBTSOV, V.I.; SMORODIN, Yu.A.; SOLOV'YEV, M.V.; TOIKACHEV, B.V.; TULINOVA, Z.I.

Interaction of cosmic ray protons at about 10 Bev energies with Pb nuclei. Dokl. AN SSSR 115 no.4:685-688 Ag '57.   (MIRA 10:12)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova i Fizicheskiy institut im. P.N. Lebedeva AN SSSR. Predstavleno akademikom D.V. Skobel'tsynym.
          (Cosmic rays)   (Collisions (Nuclear physics))

YAMSHCHIKOV, S.M., inzh.; SHUKHOV, A .N., kand.tekhn.nauk; TULOVSKIY, M.V., inzh.

Mechanization of track work in open-pit mines. Gor.zhur. no.5:
42-45 My '61.   (MIRA 14:6)

1. Institut gornogo dela AN SSSR, Lyubertsy, Moskovskoy obl.
                    (Mine railroads--Tracks)

TULINOW, B., CZERMAREW, J.

    Arytmetyka (Arithmetics), by B. Tulinow, J. Czermarew.   Reported in
New Books, (Nowe Ksizaki), No. 6, March 15, 1956.

TULINTSEV, V.

Dekorativnoe Sadovodstvo (Landscape Gardening)

432 p.   1.25

SO: Four Continent Book List, April 1954

TULINTSEV, V.G.

[Raising flowers indoors] Komnatnoe tsvetovodstvo. Moskva, Gos.
izd-vo sel'khoz. lit-ry, 1955. 105 p.   (MLRA 10:2)
         (House plants)

TULINTSEV, V.G.

3558. TULINTSEV, V.G. Dekorativnoye Drevovodstvo s Osnovami Plodovodstva. Metod. Posobiye Po Kursovomu Proektirovaniyu. (Dlya Studentov Fak. Ozel-eneniya Gorodov i Naselennykh Mest.) L., Izd-Vo VZLTI, 1954. 20s 20sm (M-Vovyssh. Obrazovaniya SSSR Vsesoyuz. Zaoch. Lesotchku. in-t). 300ekz. Bespl—(54-57712) 635.976/7 (071.4)

SO: Knizhnaya Letopis', Vol. 3, 1955

TULINTSE , V. G.

TSvetovodstvo / Flower growing / Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1953. 412 p.

SO: Monthly List of Russian Accessions, Vol. 6 No. 12 March 1954.

TULIPPE, Omer.(Liege)

Regional planning and geography in Belgium. Geogr glas 22:1-8 '60
(publ '61).